
Request for Concept Information (cont'd)

- ***Concepts submitted in response to RFI have been***
 - ***Categorized, numbered, and archived***
 - ***Distributed to appropriate TWG's***
 - ***Posted on roadmap participants web site***
- ***RFI response***

<u>As of</u>	<u>Concepts</u>
<i>April 26</i>	<i>51</i>
<i>May 3</i>	<i>82</i>
<i>May 18</i>	<i>94</i>
<i>Future</i>	<i>?</i>

Concept Statistics (5/18/2001)

By reactor coolant type

<i>Water</i>	<i>28</i>
<i>Gas</i>	<i>17</i>
<i>Liquid Metal</i>	<i>32</i>
<i>Non-classical</i>	<i>17</i>

By organization type

<i>University</i>	<i>27</i>
<i>Industry</i>	<i>22</i>
<i>Laboratory</i>	<i>45</i>

By country

<i>France</i>	<i>3</i>
<i>Japan</i>	<i>19</i>
<i>Korea</i>	<i>10</i>
<i>UK</i>	<i>4</i>
<i>US</i>	<i>45</i>
<i>7 Others*</i>	<i>13</i>

** Argentina, Brazil,
Canada, Germany,
Italy, Netherlands,
Russia*

Concept Sets

- *TWG's have grouped submitted and self-generated concepts into "concept sets"*
- *Concept sets share*
 - *Technology base*
 - *Design approach*
- *Rationale for grouping*
 - *Avoid premature down-selection*
 - *Streamline evaluation process*
 - *Basis for division of TWG effort*
- *Issues*
 - *Variability within sets*
 - *Potentially reduced design focus*

Concept Grouping: Water TWG

- ***PWR loop reactors*** (3)
- ***Integral primary system PWR's*** (6)
- ***Integral BWRs*** (6)
- ***Pressure tube reactors*** (3)
- ***High conversion cores*** (11)
- ***Supercritical water reactors*** (3)
- ***Advanced fuel cycle concepts*** (14)
 - ***MOX***
 - ***Thorium***
 - ***DUPIC***
 - ***Marble Fuel***
 - ***Neptunium***

Concept Grouping: Gas TWG

- ***Pebble bed modular reactor concepts*** (5)
- ***Prismatic modular reactor concepts*** (5)
- ***Very high temperature ($\sim 1500^{\circ}\text{C}$) reactor*** (1)
- ***Fast-spectrum reactor concepts*** (5)
- ***Others*** (4)
 - ***Fluidized bed***
 - ***Moving ignition zone concepts***

Concept Grouping: Gas TWG

Reactor Technologies	Concepts	Candidate Fuel Cycles
1. <i>Pebble Bed Modular Reactor</i>	<i>PBMR + MPBR</i> <i>G-16, G-04, G-06, G-15</i>	<i>LEU Open</i> <i>U/Th Closed</i> <i>Synergistic w/LWR's:</i> <i>Pu Burner (Recycle)</i> <i>Pu/Th Closed</i>
2. <i>Prismatic Modular Reactor</i>	<i>GT-MHR G-10 Gas Turbine</i> <i>G-11 Steam Cycle</i> <i>G-12 Process Heat, H₂</i> <i>G-08, G-13</i>	
3. <i>Very High Temp Reactor</i>	<i>G-13</i>	
4. <i>Gas Cooled Fast Reactor</i>	<i>G-02, G-05, G-07, C-03</i>	
<i>Specific Concepts</i>	<i>G-01 Fluidized Bed</i> <i>G-03 Candle Burnup</i> <i>G-14 MZFR</i> <i>C-05 REMHD</i>	

Concept Grouping: Liquid Metal TWG

- ***Four major categories of concepts:***
 - ***Medium-to-large oxide-fueled systems*** (6)
 - ***Medium-sized metal-fueled systems*** (8)
 - ***Medium-sized Pb/Pb-Bi systems*** (8)
 - ***Small-sized Pb/Pb-Bi systems*** (6)
- ***Liquid Metal TWG is also examining three supporting technology areas***
 - ***Fuels (oxide, metal, nitride)***
 - ***Coolants (Na, Pb/Pb-Bi)***
 - ***Fuel cycle (advanced aqueous, pyroprocess)***

Concept Grouping: Non-Classical Systems TWG

- ***Eutectic metallic fuel*** (2)
- ***Molten salt fuel*** (4)
- ***Gas core reactor*** (1)
- ***Molten salt cooled/solid fuel*** (1)
- ***Organic cooled reactor*** (1)
- ***Solid conduction/heat pipe*** (1)
- ***Fission product direct energy conversion*** (2)